EARTH

Every day we are in EARTH but, we don’t know if there is any life out of EARTH or the solar system. We have people who try to find out if there is life out of the EARTH or the solar system but no success. We don’t know if there are Martians in another solar system or out of EARTH. EARTH is like a big plan for us Humans no wan knows if it is or not. So many stars so many solar systems so many planets. We found two planets like EARTH but bigger we don’t know if its exactly like EARTH. We call it the goldey locks zone because goldie locks wanted it perfect and the goldie locks zone is perfect. The Keck observatory is searching for planets around other stars. A team of scientists recently confirmed six, and possibly seven, planets orbiting a star system a mere 22 light-years from Earth. More importantly, three of those planets are super-Earths, lying in the Goldilocks Zone where liquid water could exist, making them possible candidates for the presence of life. This is the first system found with a fully-packed habitable zone. The findings will be published in the journal Astronomy & Astrophysics on June 26.

Previous studies of the triple star system called Gliese 667C showed the star hosts three planets with one of them in the habitable zone. Now, a team of astronomers has reexamined the system by re-mining existing European Southern Observatory’s HARPS data and combining it with data collected from the W. M. Keck Observatory and the Magellan Telescope to find evidence for up to seven planets around the star. These planets orbit the third faintest star of a triple star system. The two other suns would look like a pair of very bright stars visible in the daytime and at night they would provide as much illumination as the full Moon.

While the HARPS data has been available since 2006, the team re-examined the data using a set of algorithms called HARPS-TERRA developed by the paper’s lead-author Guillem Anglada-Escudé of the University of Göttingen, and Paul Butler of the Carnegie Institute for Science.

Those new findings were then combined with more than 12 years of data collected on the world’s largest telescope, Keck I, fitted with the successful planet-hunting instrument, HIRES.

“We started observing GJ 667C from Keck Observatory way back in 2000, six years before the Swiss HARPS team started observing it,” said University of California Santa Cruz astronomer and team member, Steve Vogt. “And though the HARPS team was able to hit the star with much higher cadence over the past 6 years, our early observations more than doubled the overall time base of the data set, enabling much stronger constraints to be placed on the planet solutions.” Vogt’s work at the Keck Observatory was funded by a grant from the National Science Foundation (NSF).

“These new results highlight how valuable it can be to re-analyze data in this way and combine results from different teams on different telescopes,” Anglada-Escudé said.

Three of these planets are confirmed to be super-Earths — planets more massive than Earth, but less massive than planets like Uranus or Neptune — that are within their star’s habitable zone, a thin shell around a star in which water may be present in liquid form if conditions are right. This is the first time that three such planets have been spotted orbiting in this zone in the same system.

“We knew that the star had three planets from previous studies, so we wanted to see whether there were any more,” said Mikko Tuomi of the University of Hertfordshire, who also led the team. “By adding some new observations and revisiting existing data we were able to confirm these three and confidently reveal several more. Finding three low-mass planets in the star’s habitable zone is very exciting!”

Co-author Rory Barnes of the University of Washington noted the discovery suggests habitable planets may be more numerous than previously thought. “The number of potentially habitable planets in our galaxy is much greater if we can expect to find several of them around each low-mass star. Instead of looking at ten stars to look for a single potentially habitable planet, we now know we can look at just one star and have a high chance of finding several of them,” Barnes said.

“This discovery is really the start of a whole new era studying Earth-like planets which may have liquid water on the surface,” said Maria Womack, National Science Foundation program officer. “This is a result of more than a decade of hard work using the best tools to do cutting-edge science — just the kind of research NSF loves to be a part of.”

The study used measurements from the HARPS spectrograph (European Southern Observatory, Chile), Keck I-HIRES (W. M. Keck Observatory, Mauna Kea, Hawaii, USA), and the PFS (Las Campanas Observatory, Chile).

The W. M. Keck Observatory operates the largest, most scientifically productive telescopes on Earth. The two, 10-meter optical/infrared telescopes on the summit of Mauna Kea on the Island of Hawaii feature a suite of advanced instruments including imagers, multi-object spectrographs, high-resolution spectrographs, integral-field spectroscopy and a world-leading laser guide star adaptive optics system. The Observatory is a private 501(c) 3 non-profit organization and a scientific partnership of the California Institute of Technology, the University of California and NASA.